

Video Review

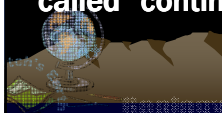
Discovery
EDUCATION

Proof was not enough...

Despite these 4 major pieces of evidence, geologists of Wegener's time still did not believe his idea.

The problem was that while Alfred was able to show evidence that it could have happened, he was not able to explain how or why the continents moved.

He needed to tell people what the mechanism was that was causing the “so-called” continental drift.



Mr. Fetch's Earth Science Classroom

The end of World War II... SOUND WAVES



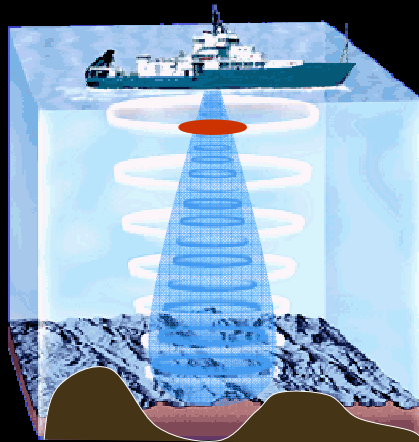
After WWII, technology advanced and scientists began to experiment with new tools.

One tool, sound waves, helped to give support to Wegener's idea of continental drift.



Mr. Fetch's Earth Science Classroom

Sound Waves: Echo Sounding



Scientists began to map the ocean floor by using Echo Sounding.

As sound waves were sent to the ocean floor, they would bounce back up off the terrain below.

The longer it took for the sound wave to return to the ship, the deeper the water.

Mr. Fetch's Earth Science Classroom

Sound Waves: Eco Sounding



Using the sound waves, scientists discovered systems of underwater mountains, volcanoes, and valleys.

The world's largest mountain range is in the Atlantic Ocean...

The Mid-Atlantic Ridge

Mr. Fetch's Earth Science Classroom

The Mid-Atlantic Ridge

Iceland

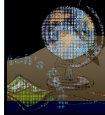


The Mid-Atlantic Ridge

Harry Hess proposed that mid-ocean ridges form because areas of the ocean crust is spreading apart. (Divergence)



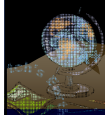
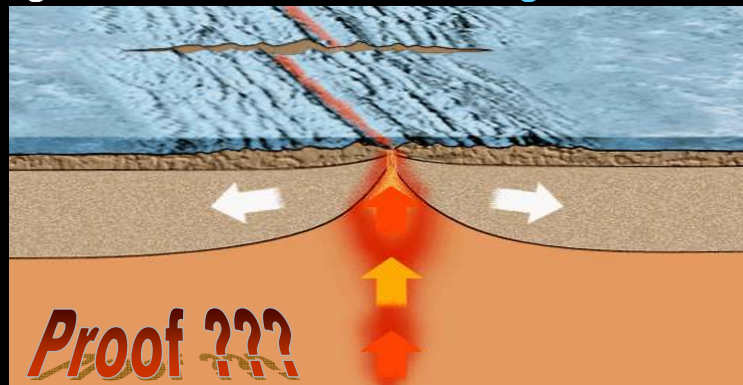
He called this idea Sea Floor Spreading.



Mr. Fetch's Earth Science Classroom

Sea-Floor Spreading

- As hot magma is forced upward, the sea floor spreads apart.
- The magma flows up through the ridge boundary.
- The magma cools and sinks as it flows away forming a high ridge.
- The magma then turns to solid crust forming new ocean floor.



Mr. Fetch's Earth Science Classroom

Evidence for Sea-Floor Spreading

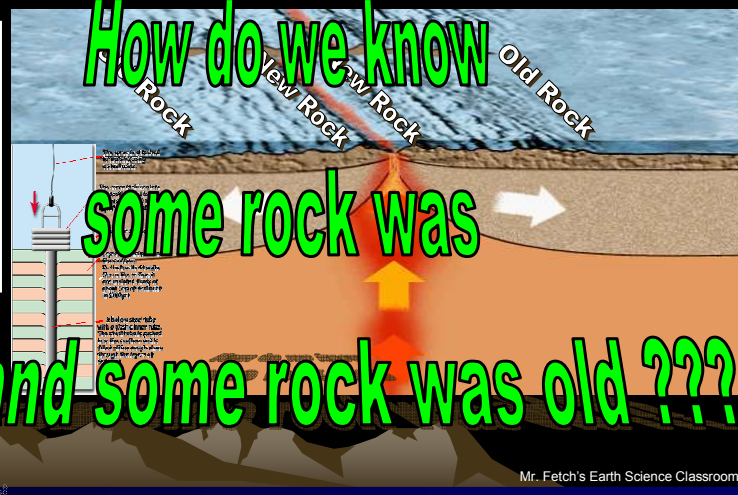
Glomar Challenger



Sea-Floor Spreading

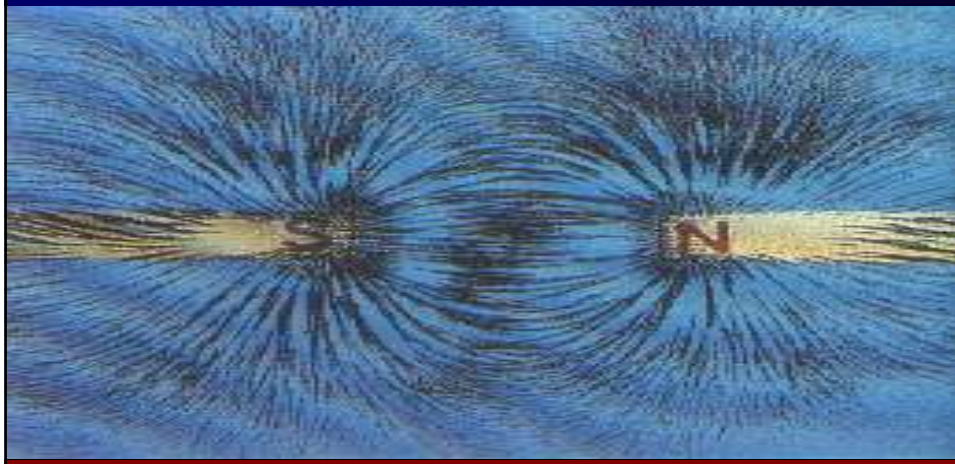
- Rock samples were taken at different locations near the ridge.
- Scientists found the youngest rock near the ridge.
- The oldest rock was found out away from the ridge.

This provided evidence that the sea floor was spreading and that new crust was being created at the ridge.



Mr. Fetch's Earth Science Classroom

More proof: Magnetic Clues



-Magnetite is **magnetic**.

-Magnetic minerals are attracted to Earth's magnetic field.

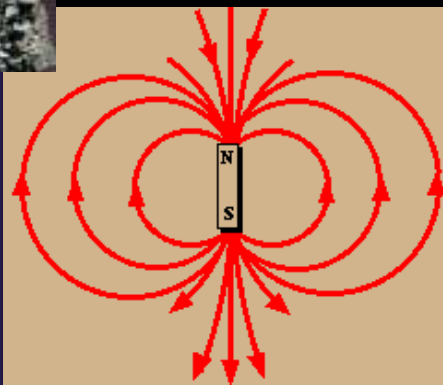
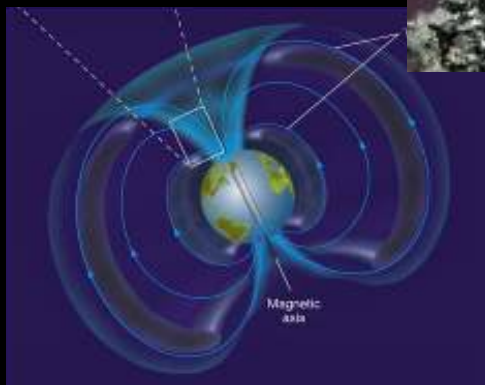
When **magma** containing these minerals **cools**, it **freezes the magnetic mineral grains** so they point in the direction of the Earth's magnetic field.

Mr. Fetch's Earth Science Classroom

More proof: Magnetic Clues

-Over time, **Earth's magnetic field changes (reverses direction)**.

-As a result, the **direction the minerals point changes with it**.



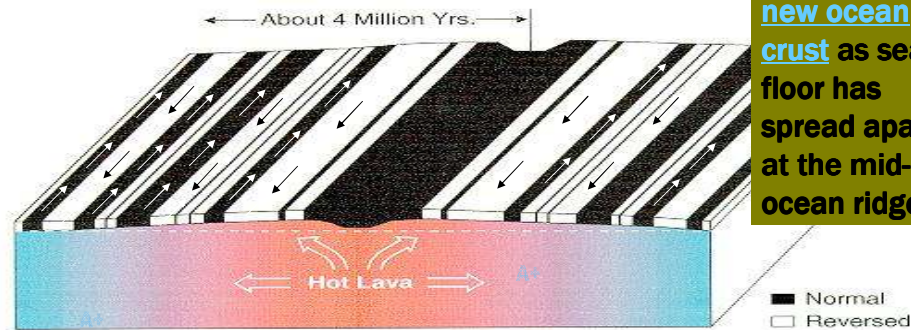
Mr. Fetch's Earth Science Classroom

The Mid-Atlantic Ridge: Magnetic Clues

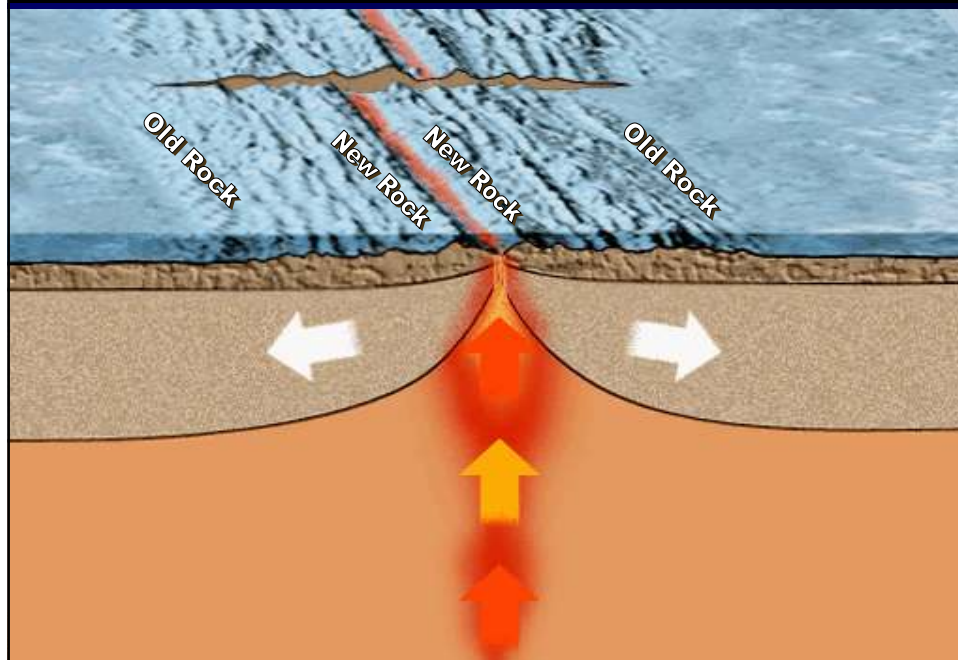
These changes result in magnetic striping along the ocean floor.

Each white and dark stripe indicates a change in Earth's Magnetic field and thus a change in direction in which the magnetic minerals point.

Thus, Earth's magnetic field has recorded the formation of new ocean crust as sea floor has spread apart at the mid-ocean ridge.



Sea-Floor Spreading



What the point ????

Herry Hess' idea was proven correct after finding that the sea-floor was actually spreading.

Herry Hess' idea of sea floor spreading gave Wegener's idea of continental drift the support he was looking for.

The
WHY
and
HOW



Wegener finally had a mechanism to explain how continental drift could occur.

Sea-floor spreading was pushing the crust as it spread apart, causing the continents to move with it.

